

WHAT IS CLAIMED IS:

1. Ferritic heat-resistant steel capable of forming an oxide film on its surface during use and having good steam oxidation-resistance, which is characterized in that ultra-fine oxide particles having a diameter of not larger than 1 micron are formed in and/or around the interface between the steel base and the oxide film formed thereon, to thereby increase the adhesiveness between the oxide film and the steel base.

2. Ferritic heat-resistant steel as claimed in claim 1, which contains from 8.0 to 13.0 % by weight of Cr and contains at least one of Ti and Y added thereto in a total amount of from 0.01 to 0.30 % by weight.

3. Ferritic heat-resistant steel as claimed in claim 1 or 2, which has a composition comprising from 8.0 to 13.0 % (by weight - the same shall apply herein) of Cr; at least one of from 0.02 to 0.18 % of C, from 0.1 to 1.0 % of Si, from 0.05 to 1.5 % of Mn, from 0 to 0.5 % of Ni, from 0 to 4.0 % of W, from 0 to 2.0 % of Mo, provided that  $W + 2Mo \leq 4$  %, from 0.10 to 0.50 % of V, from 0.02 to 0.14 % of Nb, from 0 to 0.1 % of N, from 0 to 0.010 % of B and not larger than 0.010 % of O; at least one of Ti and Y in an amount of  $0.01 \% \leq Ti + Y \leq 0.30 \%$ ; and a balance of Fe and inevitable impurities.

4. Ferritic heat-resistant steel having good steam oxidation-resistance and high long-term creep strength, which contains at least one of Co, Rh, Ir, Pd and Pt in a total amount of not larger than 5.0 % by weight.

5. Ferritic heat-resistant steel as claimed in claim 1, which contains Cr in an amount of from 8.0 to 13.0 % by weight and at least one of Rh and Ir in a total amount of from 0.3 to 5.0 % by weight.

6. Ferritic heat-resistant steel as claimed in claim 5, which contains at least one of Rh and Ir in an amount of from 0.3 to 5.0 % (by weight - the same shall apply herein) of Rh and from 0.6 to 5.0 % of Ir and in a ratio of  $0.3 \% \leq \text{Rh} + (1/2) \text{Ir} \leq 5.0 \%$ .

7. Ferritic heat-resistant steel as claimed in claim 5 or 6, of which the lath structure is made fine and the martensite phase is reinforced by at least one of Rh and Ir added thereto.

8. Ferritic heat-resistant steel as claimed in any one of claims 5 to 7, which comprises from 0.06 to 0.18 % (by weight - the same shall apply herein) of C, from 0 to 1.0 % of Si, from 0 to 1.5 % of Mn, not larger than 0.030 % of P, not larger than 0.015 % of S, from 8.0 to 13.0 % of Cr, from 0 to 4.0 % of W, from 0 to 2.0 % of Mo, provided that  $W + 2\text{Mo} \leq 4.0 \%$ , from 0.030 to 0.14 % of Nb, from 0.10 to 0.50 % of V, from 0 to 0.10 % of N, from 0 to 0.030 % of B, not larger than 0.010 % of O, and from 0 to 0.050 % of sol. Al; at least one of Rh and Ir in a

total amount of from 0.3 to 5.0 %; and a balance of Fe and inevitable impurities.

9. Ferritic heat-resistant steel having steam oxidation resistance, which contains Cr in an amount of from 8.0 to 13.0 % by weight, and at least one of Pd and Pt in a total amount of from 0.3 to 5.0 % by weight.

10. Ferritic heat-resistant steel as claimed in claim 9, which contains at least one of Pd and Pt in an amount of from 0.3 to 5.0 % (by weight - the same shall apply herein) of Pd and from 0.3 to 5.0 % of Pt and in a ratio of  $0.3 \% \leq \text{Pd} + \text{Pt} \leq 5.0 \%$ .

11. Ferritic heat-resistant steel as claimed in any of claim 9 or 10, which comprises from 0.06 to 0.18 % (by weight - the same shall apply herein) of C, from 0 to 1.0 % of Si, from 0 to 1.5 % of Mn, not larger than 0.030 % of P, not larger than 0.015 % of S, from 8.0 to 13.0 % of Cr, from 0 to 4.0 % of W, from 0 to 2.0 % of Mo, provided that  $W + 2\text{Mo} \leq 4.0 \%$ , from 0.030 to 0.14 % of Nb, from 0.10 to 0.50 % of V, from 0 to 0.10 % of N, from 0 to 0.030 % of B, not larger than 0.010 % of O, and from 0 to 0.050 % of sol. Al; at least one of Pd and Pt in a total amount of from 0.3 to 5.0 %; and a balance of Fe and inevitable impurities.

12. A method for producing ferritic heat-resistant steel of any one of claims 1 to 4, which comprises heating steel at a temperature not lower than 1250°C, subjecting it to plastic

working, such as forging, rolling or the like, then immediately keeping it at a temperature falling between 1000 and 1150°C for 1 hour or longer, and thereafter rapidly cooling it to a temperature not higher than its martensitic transformation-finishing point thereby making it have a martensitic texture, and then heating and tempering it at a temperature falling between 650 and 800°C.